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Title:	Sandia Canyon Temperature Investigation - Perennial Reach of Sandia Canyon Classified Segment - 20.6.4.126 NMAC Assessment Unit NM-9000.A_47
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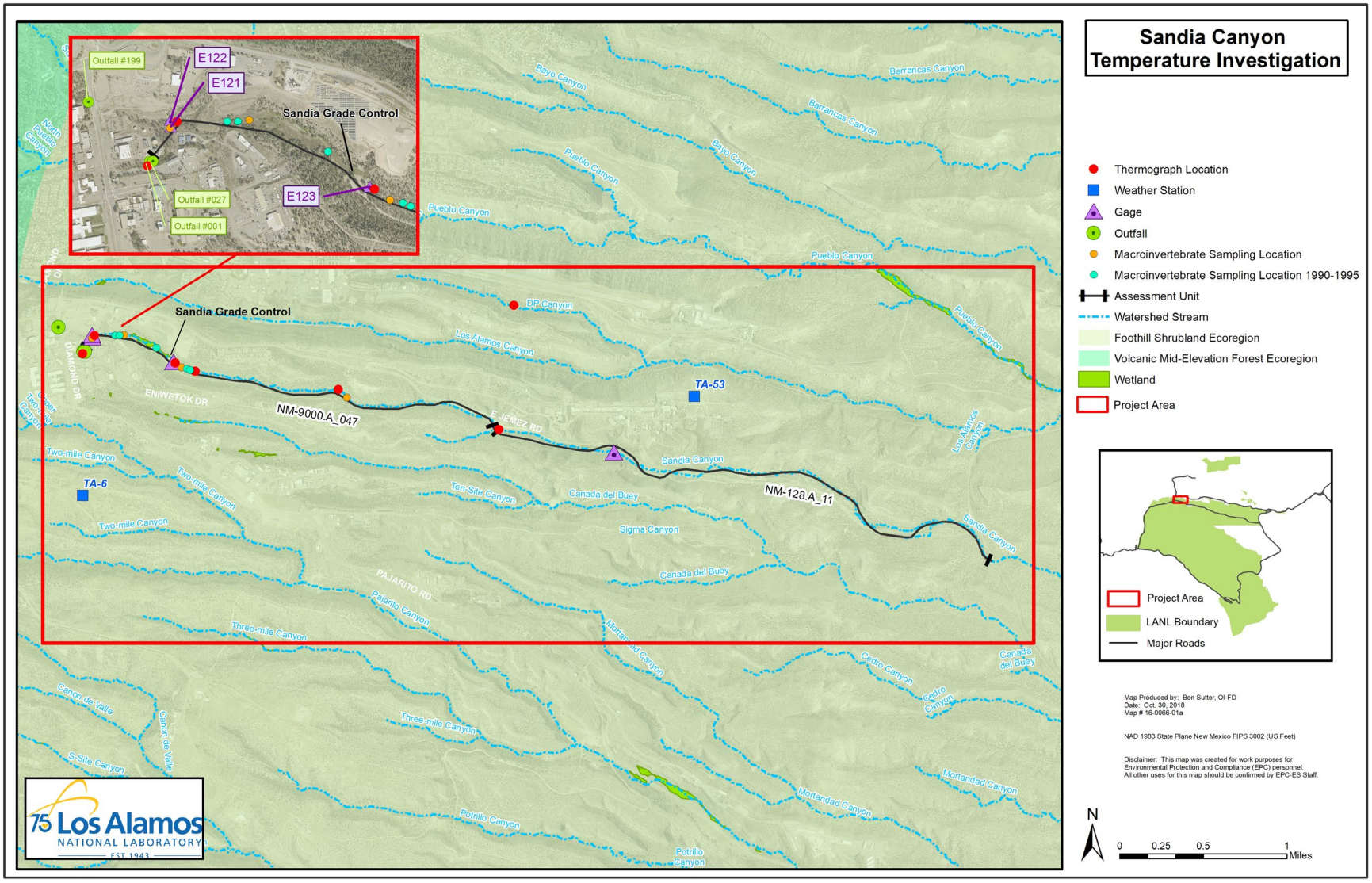
Sandia Canyon Temperature Investigation

Perennial Reach of Sandia Canyon
Classified Segment - 20.6.4.126 NMAC
Assessment Unit NM-9000.A_47

December 5, 2018

Study Area – Assessment Unit NM-9000.A_47



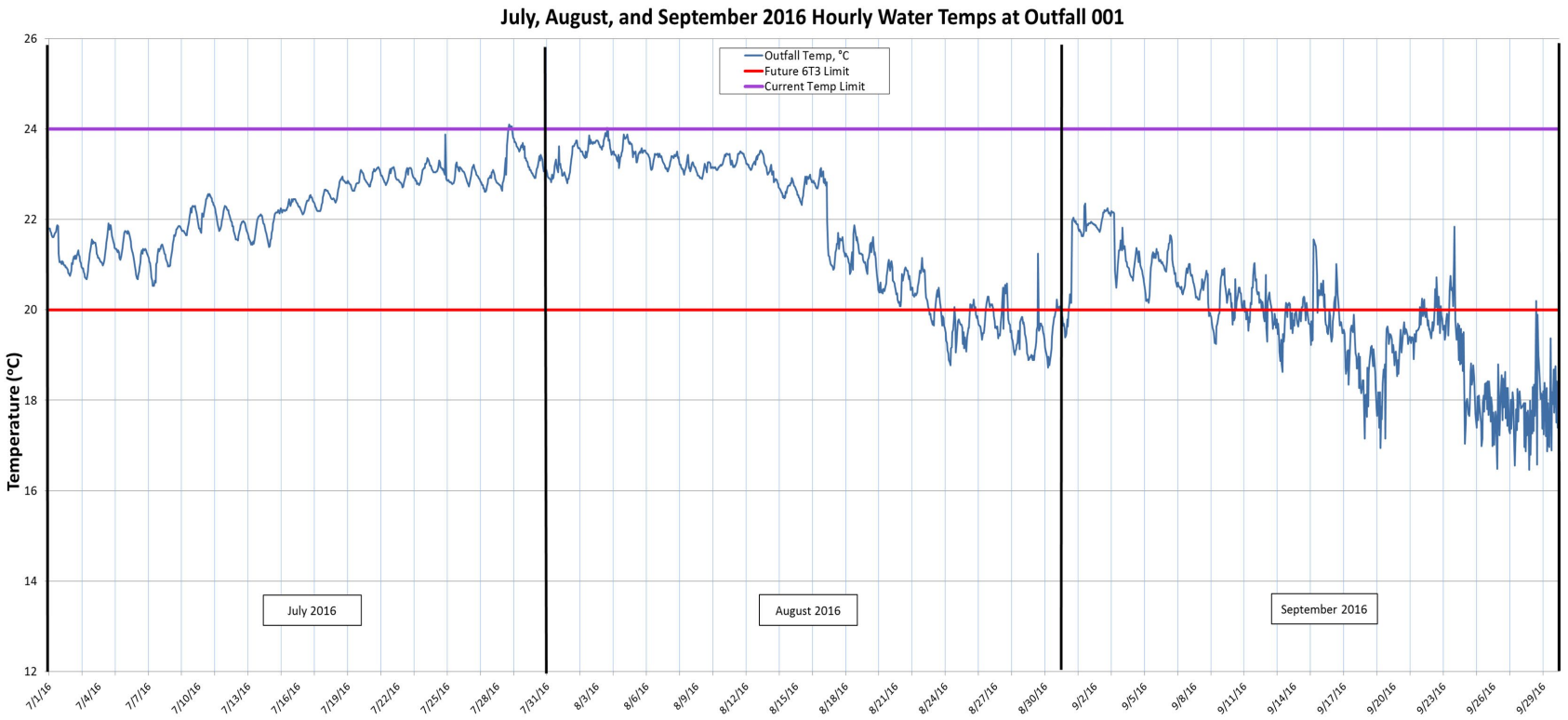
Perennial Reach of Sandia Canyon

NPDES Outfall to Sandia Canyon

- *Effluent dominated stream*
- *NPDES Outfalls 001, 199 and 027 Discharge to Sandia Canyon*
- *2005 - Classified Aquatic Life Use: Cold Water w/Segment Specific Temperature Criteria - 24°C (2005)*
- *2010 Temperature Criteria Changed to 6T3 20°C*
- *October 2014 NPDES Permit NM0028355 issued with 6T3 temperature limits*

Outfall 001 Temperatures Summer 2016

Future 6T3 (20°C) cannot be met without decreasing temperature prior to discharge.



Use Attainability Analysis (UAA)

- *UAA is a study to determine use attainability (Cold Water Aquatic Life)*
- *A designated use, which is not an existing use, may be remove if the State can demonstrate that attaining the designated use is not feasible because:*
  1. **<u>Naturally occurring pollutant concentrations prevent the attainment of the use</u>**; or

1. Natural, ephemeral, intermittent or low flow conditions or water levels prevent the attainment of the use, unless these conditions may be compensated for by the discharge of sufficient volume of effluent discharges without violating State water conservation requirements to enable uses to be met; or

2. Human caused conditions or sources of pollution prevent the attainment of the use and cannot be remedied or would cause more environmental damage to correct than to leave in place; or Dams, diversions or other types of hydrologic modifications preclude the attainment of the use and it is not feasible to restore the water body to its original condition or to operate such modification in a way that would result in the attainment of the use; or

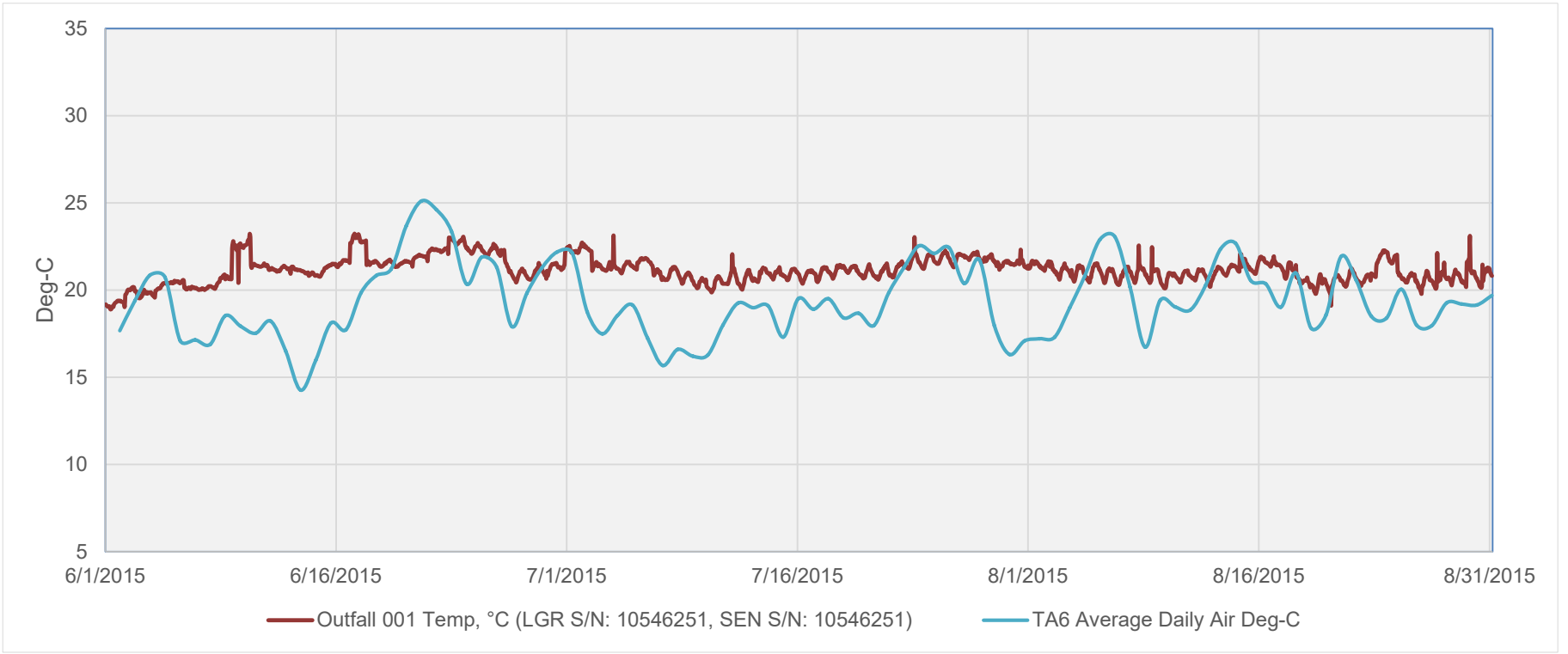
3. Dams, diversions, or other types of hydrologic modifications preclude the attainment of the use, and is not feasible to restore the water body to its original condition or to operate such modification in a way that would result in attainment of the use.

4. Physical conditions related to the natural features of the water body, such as the lack of a proper substrate, cover, flow, depth, pools, riffles, and the like, unrelated to water quality, preclude attainment of aquatic life protection uses; or
5. Controls more stringent than those required by sections 301(b) and 306 of the Act would result in substantial and widespread economic and social impact

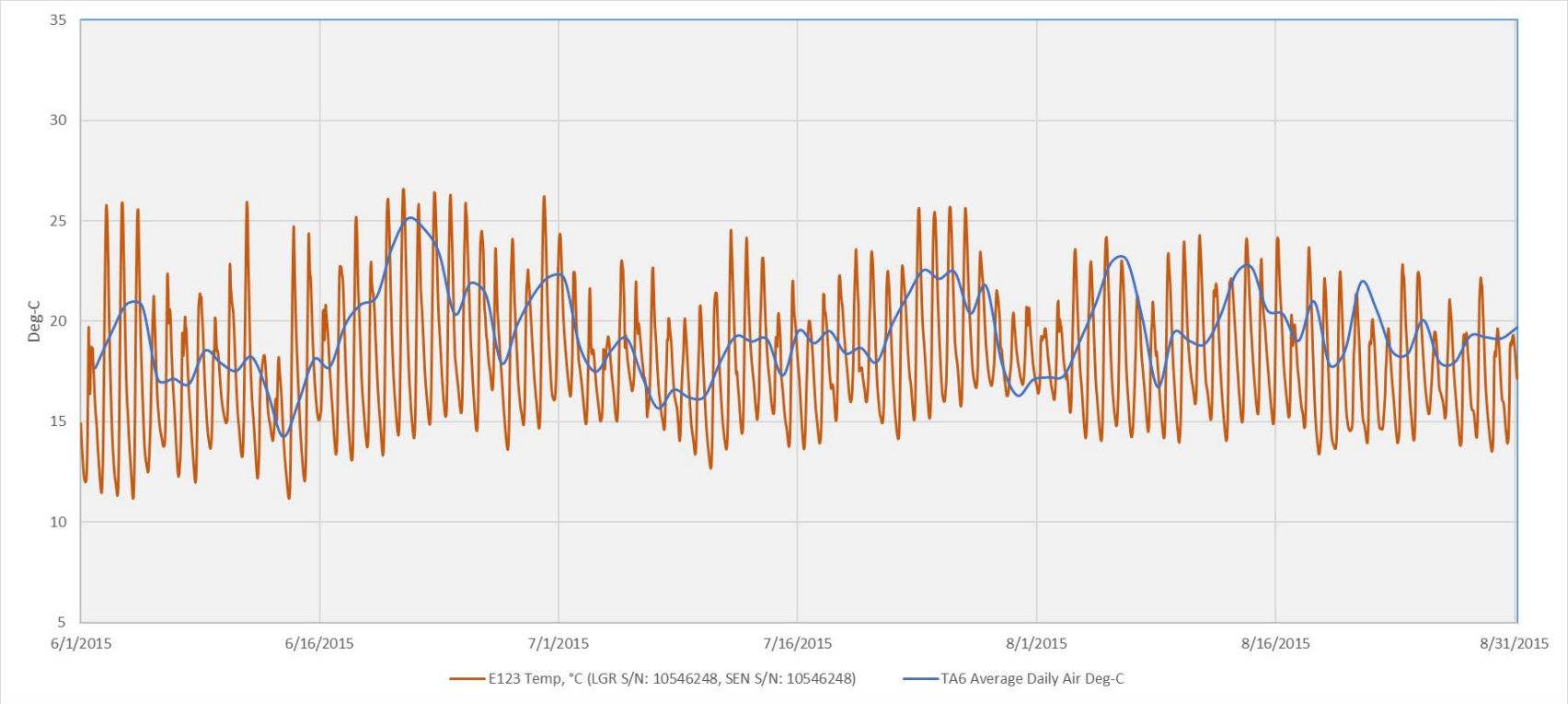
Thermograph Deployment July 2014 to September 2018

Thermographs in Sandia Canyon at E123 and Below E123

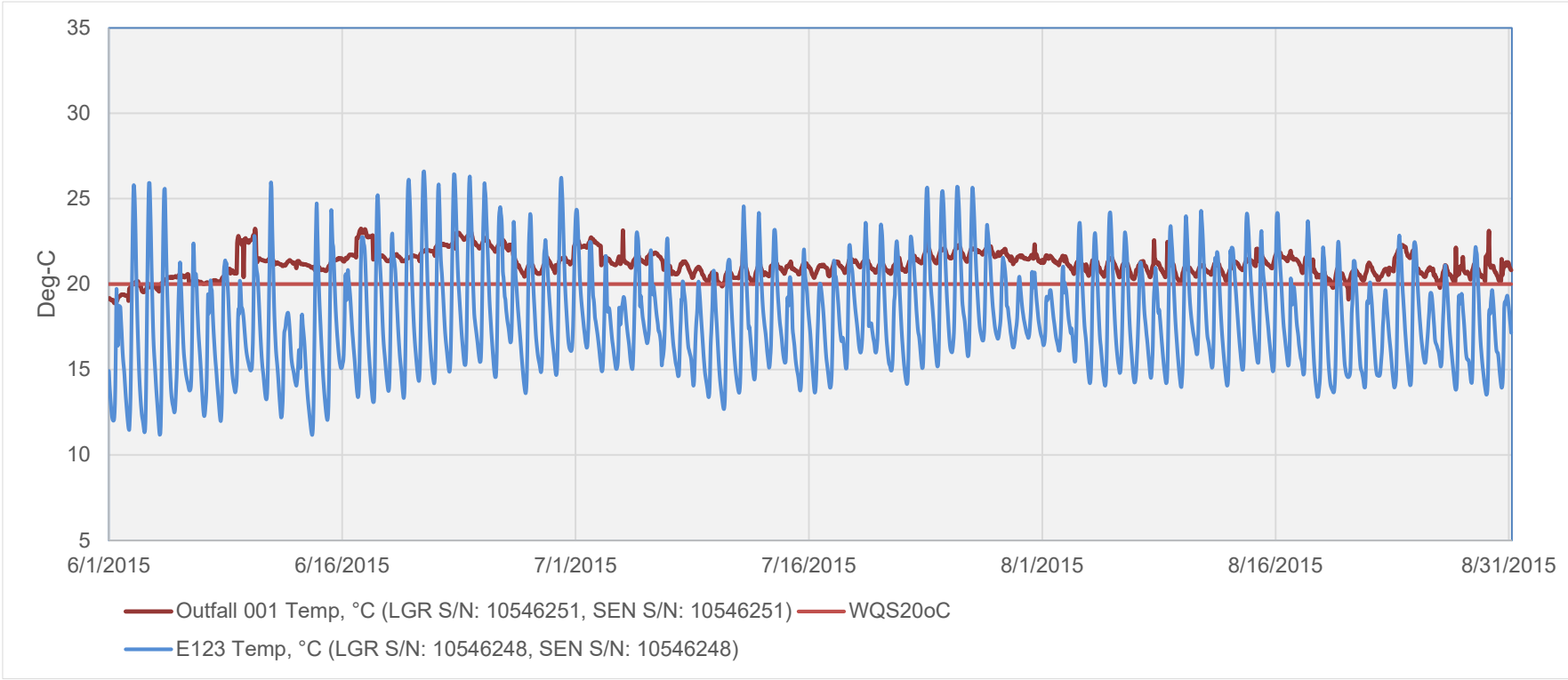
NPDES Outfall 001 vs TA-06 Air Temperatures Summer 2015



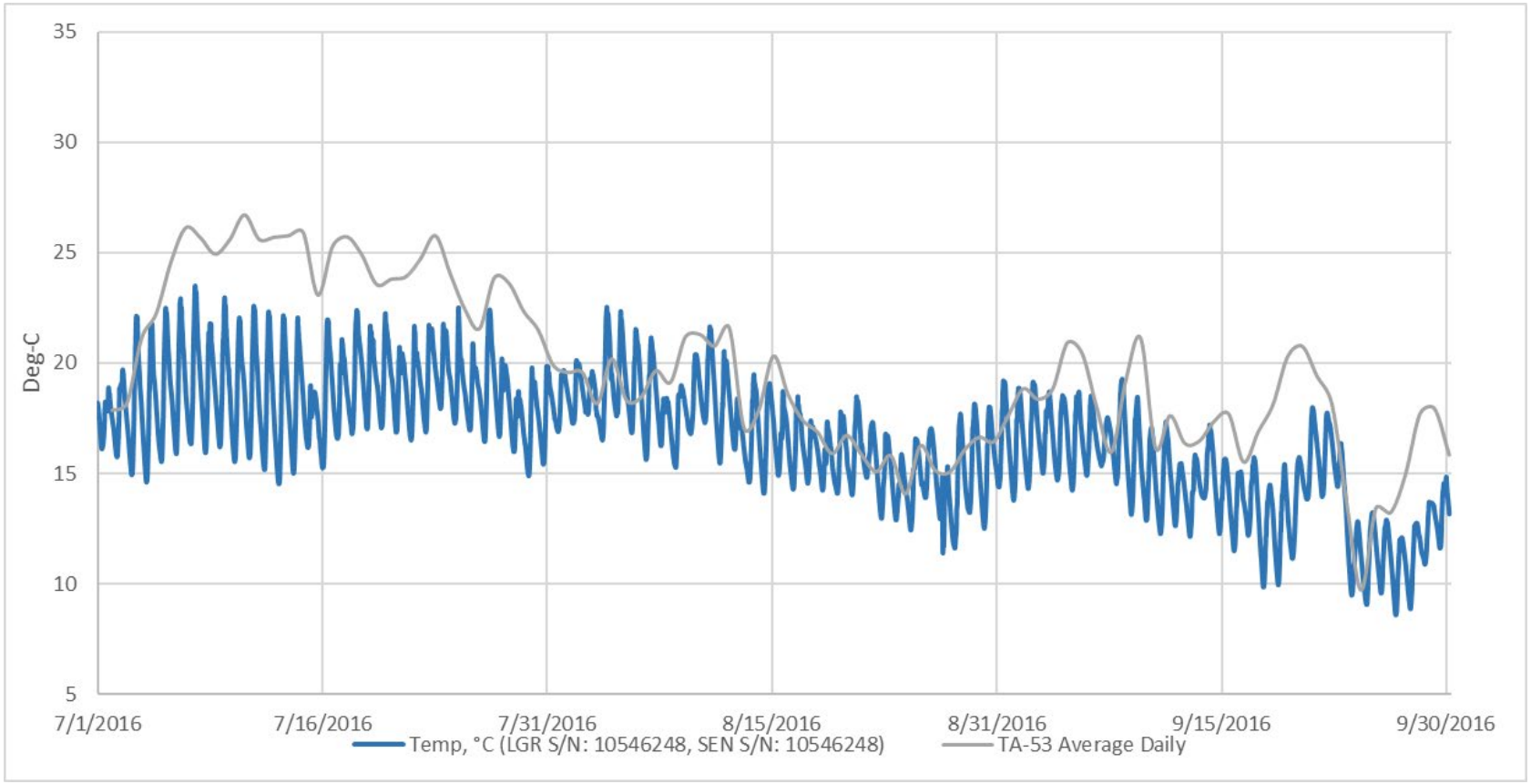
E123 Thermograph vs TA-06 Air Temperature Summer 2015



Temperatures at E123 and NPDES Outfall 001



Thermograph Below E123 vs TA53 Air Temperatures Summer 2016



Air-Water Temperature Correlation - Tool for identifying appropriate stream classifications and attainable aquatic life use subcategories (NMED 2011)

Maximum weekly average (water) temperature equal to July average air temperatures MWAT=ATEMP (July Average Air Temperature)

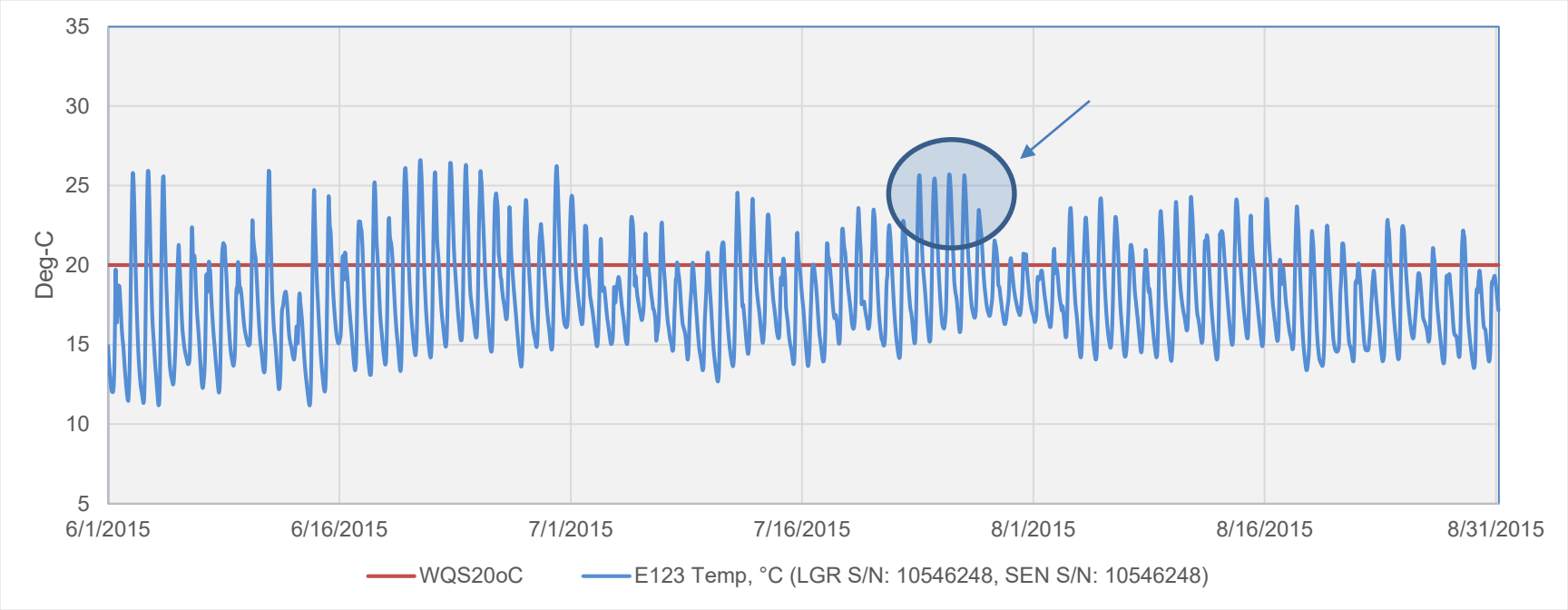
Attainable aquatic life use subcategories can be related to July average air temperatures, as follows:

- *high quality and coldwater uses may be attainable if average air temperatures ≤ 18°C*
- **marginal coldwater and coolwater uses may be attainable if average air temperature is ≤ 23°C*
- *uses more restrictive than warmwater may be attainable if July average air temperature is ≤ 23°C*

**TA-06 July 2015 Air Temperature Average (ATEMP) – 18.9°C*

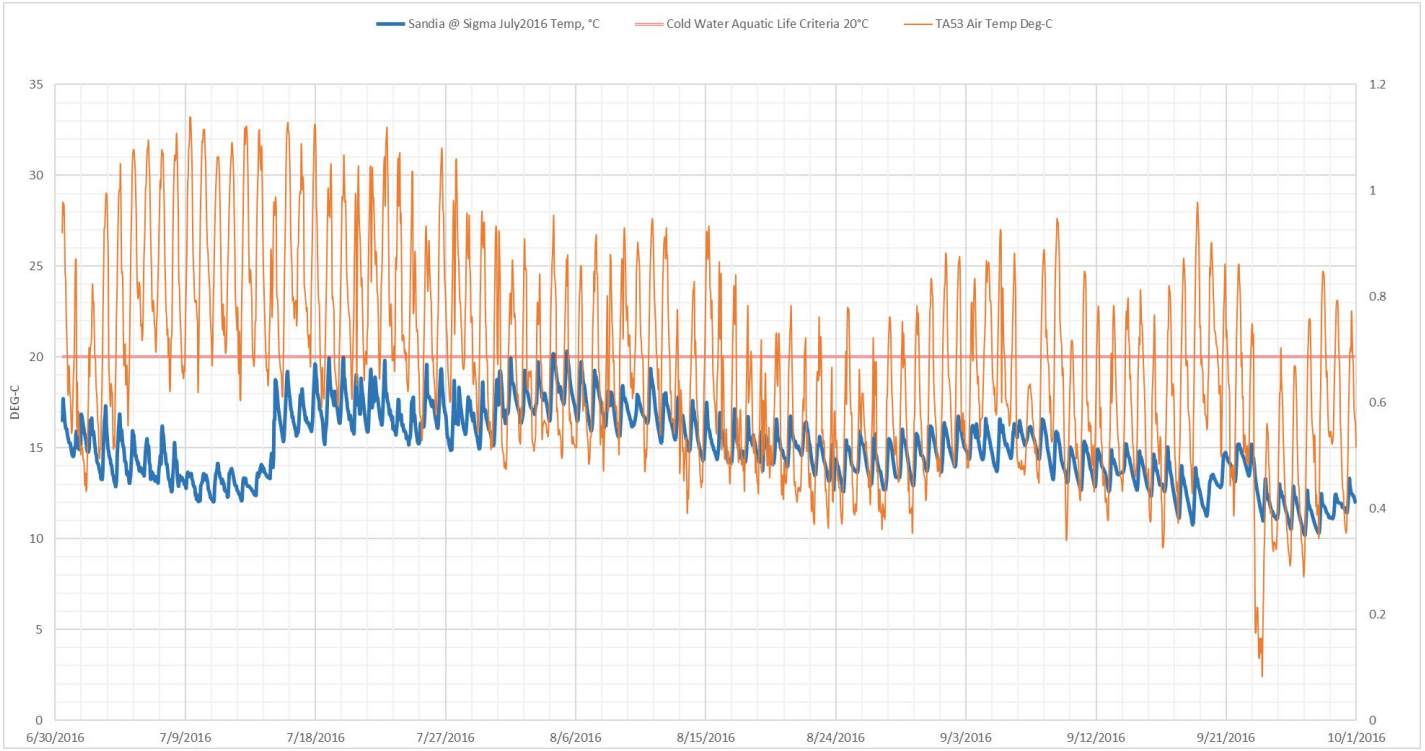
**PRISM July 2015 (publicly available temperature model) – gridded data for July temperatures for any location in the U.S. (http://www.prism.oregonstate.edu) – 20.2°C*

E123 Thermograph Temperatures vs WQS 20°C



Water Quality Standard of 6T3 20°C exceeded during period of July 24th through July 28th (6T3 – 6 consecutive hours on 3 consecutive days)

Sandia at Sigma Canyon – Summer 2016



Air-water temperature correlation applicable unless there are significant groundwater inputs or microclimate effects

- *Infiltration in wetland area with lateral movement through alluvial - emerging down stream below E123*
- *Microclimate effects and 300' culvert*